Cold Stress

Organization

Presenter's Name

Contact

Cold Stress

- Body temperature considered normal at or near 98.6° F
- Cold stress occurs when body temperature drops below 95° F

Body Heat Loss

- Respiration
- Evaporation
- Conduction
- Radiation
- Convection

Hypothermia

- Cold kills in two distinct steps
  - Exposure
    - **cold**
    - **wind**
  - Exhaustion

Increased Risk

- Predisposed health conditions
  - cardiovascular disease
  - diabetes
  - hypertension
- Medications
- Poor physical conditioning

Mild Hypothermia

- Body temperature: 97° to 93° F
- Shivering
- Alert
- Limbs numb, loss of dexterity, clumsiness
- Pain

Mild Hypothermia - First Aid

- Prevent further heat loss
- Give warm, sweet liquids
- Apply gentle heat source
- Exercise to generate heat
- Keep head and neck covered

Moderate Hypothermia

- Body temperature: 93° to 90° F
- Shivering (may decrease or stop)
- Alert
- Limbs numb, loss of dexterity, clumsiness
- Pain

Moderate Hypothermia - First Aid

- Prevent further heat loss
- Keep head and neck covered
- Apply gentle heat source
- Limit exercise
- Give sips of warm liquids if victim fully conscious
- No alcohol
- Checked by medical personnel

Severe Hypothermia

- Body temperature 90° to 82° F
- Shivering decreased or stopped
- Confusion and loss of reasoning
- Speech slurred
- Semi-conscious/unconscious
- Muscles rigid

Severe Hypothermia - First Aid

- Victim is in serious trouble
- Treat for shock
- Apply external heat source
- Avoid jarring victim
- No food or drink
- Transport to hospital

Critical Hypothermia

- Body temperature: < 82° F
- Unconscious and may appear dead
- Breathing shallow
- Pulse slow
- Pupils (eyes) dilated
- Body rigid

Critical Hypothermia - First Aid

- Don’t give up
- Handle with extreme care
- Tilt head to open airway
- Perform CPR
- Stabilize temperature with external heat source
- Hospitalize as soon as possible

Protection From Hypothermia

- Wear adequate head covering
- Wear layered clothing
- Protect feet and hands, wear gloves or mittens
- Drink plenty of fluids
- Pace all activities in the cold
- Limit exposure time

How to Protect

- Recognize conditions that lead to cold-induced injuries and illnesses
- Learn the signs and symptoms of cold-induced injuries and illnesses
- Train all personnel
- Select proper clothing and protective equipment
- Take frequent breaks in warm area

How to Protect

- Perform work in warmer part of day
- Avoid exhaustion and fatigue
- Use the buddy system
- Drink warm beverages, avoid caffeine
- Eat warm, high-caloric foods

Hypothermia in Water

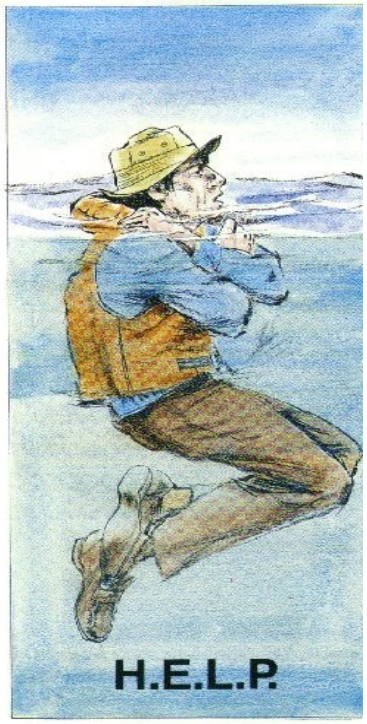
- Body heat loss is 25-times faster in water than in cold air
- Swimming increases heat loss by 35%
- H. E. L. P. reduces heat loss
- HUDDLE extends survival time by 50%

Water Immersion Survival

Water Temperature	Exhaustion	Survival Time
Degrees in Fahrenheit		
32.5	15 minutes	15 - 45 minutes
32.5 - 40	15 - 30 minutes	30 - 90 minutes
40 - 50	30 minutes - 1 hour	1 hour - 3 hours
50 - 60	1 hour - 2 hours	1 hour - 6 hours
60 - 70	2 - 7 hours	2 - 40 hours
70 - 80	3 - 12 hours	3 hours - indefinite
>80	Indefinite	Indefinite

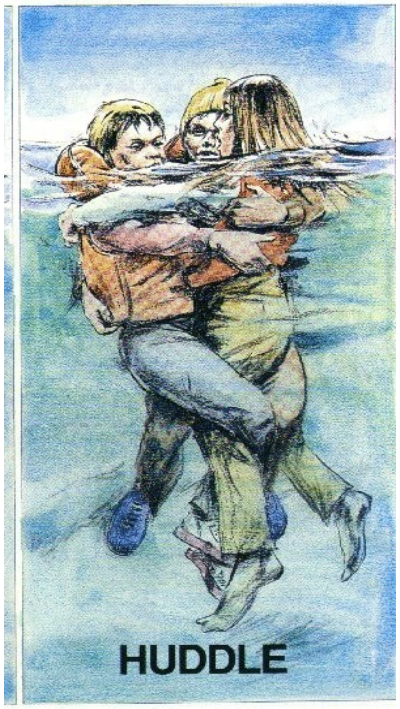
H. E. L. P.

- Heat Escape Lessening Posture



HUDDLE

- Extends survival time by 50% over swimming or treading water



Frostbite

- Freezing of deep layers of skin
- Pale, waxy-white skin color
- Skin becomes hard and numb
- Usually affects:
  - Fingers and hands
  - Toes and feet
  - Ears and nose

Frostbite - First Aid

- Move victim to warm dry area
- Remove wet or tight clothing
- Do not rub affected areas
- Gently place affected area in warm water
- Seek medical attention

Questions?